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## Bacterial Canker of Tomato

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Plant Disease Control

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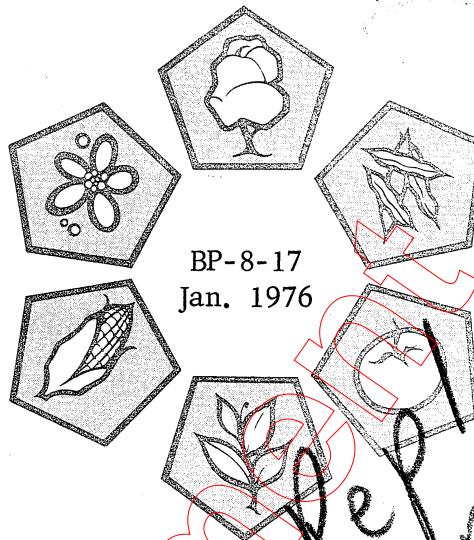
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Purdue University  
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## Plant Disease Control



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## Bacterial Canker of Tomato

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Bacterial canker is potentially one of the most destructive diseases of tomato. Caused by the bacterium Corynebacterium michiganense (Smith) Jensen, canker is distributed throughout the world in every major tomato-growing region. Only sound management practices based on correct diagnosis and use of control measures will reduce the prevalence of this disease.

### Symptoms of Bacterial Canker

Plants may be infected at any stage of growth. Seedlings that may be infected at planting time usually cannot be distinguished from healthy seedlings until several days after transplanting in the greenhouse or field. Wilting of infected plants is generally the first noticeable symptom. Initially, lower leaves wilt and curl upwards with recovery during nighttime periods. Leaflets on one side of the petiole wilt at first with the entire leaf wilting eventually. Wilting proceeds slowly upwards to uppermost leaves, which eventually die from the margins inward. The petiole, however, characteristically remains green and firmly attached to the main plant stem. Yellow to dark brown streaking on the

surface of stems and petioles may accompany wilting. Streaks are most frequently located at the junctions of stems and petioles and may break open in late stages of development to form cankers. As the disease progresses, pith tissue becomes yellow to brown in color with soft cavities at variable intervals. When a stem from an infected plant is cut lengthwise, a light yellow to tan-colored area may be observed just beyond the vascular tissue. The discoloration appears similar to that associated with infection by Fusarium and Verticillium. Thus, diagnosis on the basis of discolored tissue alone is not a reliable diagnostic symptom. Such discoloration does not occur in the roots of plants infected with canker.

Fruit symptoms include bird's-eye spots with white margins and tan colored, small, raised centers. Spots are generally 1/8 to 1/4 inch in diameter. Fruits from infected plants are often stunted in size, show a mottling of the surface and a ribbed appearance, and may fall prematurely from infected plants.

## Control

Once introduced to field or greenhouse tomato plantings, the bacterial canker pathogen is extremely difficult to control. Fungicides commonly used for disease control in tomato production have little or no effect on the canker bacterium. Fixed copper sprays may help to reduce secondary spread, but do not prevent spread completely. The use of air blast sprayers in canker infected fields may, in fact, aid in field movement of bacteria by blowing bacteria from infected to healthy plants. Superficial wounds created by blowing water droplets and small particles of soil allow easy entrance of bacteria into the plant.

Control can be achieved by careful attention to the following points:

1. a) Plant only disease-free seed.

The bacterial canker pathogen is seed transmitted. Surface bacterial contamination may occur when seed is extracted from fruits infected with the canker pathogen. Thus a seed certification program whereby seed produced is certified to be disease free reduces chances of seed transmission. Most progressive seed producers follow a seed certification program.

b) Plant only certified disease-free transplants or transplants grown from dis-

ease-free seed under a vigorous inspection program. It is usually not possible to visually differentiate infected from healthy seedlings at the time of transplanting.

2. Rotate your tomato crops. The canker pathogen is able to persist in the soil for extended periods of time. Although this time will vary depending upon environmental conditions, a period of at least 3 and preferably 4 years should separate tomato crops. The same holds true for seedbeds if you grow your own transplants. Rotation of your seedbed is a much more reliable method of control than relying upon soil fumigation. Rotation with crops that are not susceptible to species of Verticillium and/or Fusarium attacking tomato is suggested (e. g. field or sweet corn).

3. Steam sterilize and wash equipment after each harvest. Canker-causing bacteria can persist on pruning equipment, irrigation equipment, staking posts, etc. for extended periods of time.

4. Control weeds which belong to the tomato-potato family (e. g. nightshade).

5. Plant-pruning greatly increases the chance of plant-to-plant transmission of the bacterial pathogen. If pruning is necessary, prune areas affected with canker last. Sterilize all pruning equipment after use.